



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,884	08/17/2005	Reinhard Milich	10191/3788	5065
26646	7590	09/25/2007	EXAMINER	
KENYON & KENYON LLP			BOMKAMP, ERIC A	
ONE BROADWAY			ART UNIT	
NEW YORK, NY 10004			PAPER NUMBER	
			2826	
			NOTIFICATION DATE	
			DELIVERY MODE	
			09/25/2007	
			ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@kenyon.com

Office Action Summary	Application No. 10/520,884	Applicant(s) MILICH ET AL.	
	Examiner Eric A. Bomkamp	Art Unit 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.


- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


Minhloan Tran
Primary Examiner
Art Unit 2826

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1-10-2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1-10-2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claim 25 is objected to because of the following informalities: It is suggested that line 3 be amended to "the stacked construction of the power MOS components includes...".

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 23-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azotea et al., US 6,060,795.
4. With respect to claim 23, Azotea shows a rectifier for rectifying an alternating current into a direct current, comprising: a control part including a controller component (64) and control terminals; a power circuit controlled by the control part and including switching elements; and

Art Unit: 2826

all power-conducting components of the power circuit are power MOS components and are integrated in a stacked construction (Figs. 3 and 5, Column 4, lines 36-43).

Azotea discloses that the power device is a rectifier but fails to show a three-phase generator including a three-phase stator winding, wherein: phases of the stator winding are triggered via the switching elements.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a three-phase generator in the system because the main purpose of a rectifier is to convert an AC signal from a three-phase generator to a DC signal.

5. With respect to claim 24, Azotea shows the power-conducting components are power MOS components that are contacted on both sides (Fig. 5, column 4, lines 36-43).

6. With respect to claim 25, Azotea shows a cooling device (203, 204), wherein: the stacked construction of the power semiconductor includes a first substrate and a second substrate (200), between which the power MOS (201, 202) components are placed via contacts on both sides (Fig. 9, column 8, lines 36-43).

7. With respect to claims 26 and 27, Azotea shows the cooling device is situated on top and on bottom of the stacked construction (Fig. 9).

8. With respect to claim 28, Azotea shows the power circuit is contacted outward over a surface (Fig 9).

9. With respect to claim 29, Azotea fails to show the power circuit is contacted outward via a heat conducting paste applied over a surface for dissipating heat.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a heat conducting paste for contact because it reduces the heat generated by the

Art Unit: 2826

device, which makes the device more reliable. One of the objects of the prior art is to effectively dissipate heat generated by the device, and a heat conducting paste is often used as an adhesive material in such applications and is well known in the art.

10. With respect to claim 30, Azotea shows that the MOS components are contacted on both sides via contact surfaces serving as soldering points/soldering surfaces in the stacked construction (Fig. 5 and 9).

11. With respect to claim 31, Azotea shows the power MOS components are contacted on both sides via contact surfaces serving as conductive adhesive surfaces in the stacked construction.

12. With respect to claim 32, Azotea shows a cooling element, wherein the stacked construction of the power circuit includes a pressed screen and a first substrate, between which the power MOS components, contacted on both sides, are placed (Azotea discloses screening as an option to mount the interface circuit pads and traces. It is

13. With respect to claim 33, Azotea fails to show the stacked construction of the power circuit includes an IMS substrate, to which the power MOS components are connected.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to mount the power MOS components to a insulated metal substrate (IMS) because it achieves two obvious goals, preventing a short circuit between the substrate and the components, while also encouraging heat dissipation via the metal substrate.

14. With respect to claim 34, Azotea fails to show the control part is designed in a single-chip construction and includes a controller-ASIC component having an integrated driver component.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a controller having an ASIC component and an integrated driver component, because it would reduce the amount of area needed for the total device.

15. With respect to claim 35, Azotea shows the control part is designed in a multi-chip construction having a separate controller-ASIC component (32) and a separate driver component (30) (Fig. 1).

16. With respect to claim 36, Azotea shows the power circuit (10) contains power terminals (18) as contacts between the first substrate (14) and the second substrate (16) (Fig. 1, column 2, lines 35-47).

17. With respect to claim 37, Azotea shows the power circuit includes power terminals (18) that are placed on the first substrate (14) of the stacked construction (Fig. 1, column 2, lines 35-47).

18. With respect to claim 38, Azotea discloses a stacked construction power device, but fails to show an injection molded material in which the power MOS components are encapsulated.

19. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to encapsulate the power MOS components because it would protect the components from elements, such as moisture and dust.

20. With respect to claim 39, Azotea shows power terminals (200) of the power circuit (201, 202) extend outside on an exposed, coating-free surface of one of substrate surfaces of the stacked construction (Fig. 9, column 8, lines 36-43).

21. With respect to claim 40, Azotea shows the power terminals (200) extend outside laterally from the power circuit (201, 202) (Fig. 9).

Art Unit: 2826

22. With respect to claim 41, Azotea fails to show the control part is situated on a surface, made from injection molded material, of the power circuit and is connected thereto via the control terminals extending outside in a vertical direction.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to situate the control part on a surface of the power circuit made from molded material because it would prevent a short circuit between the two components.

23. With respect to claim 42, Azotea fails to show that the control part includes an application-specific element.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an ASIC in the control part because ASICs are well known to aid specific functions in electrical systems.

24. With respect to claim 43, Azotea shows the stacked construction includes a base plate (14) having metallic fixing elements (99A, 99B) projecting from sides thereof (Fig. 5).

25. With respect to claim 44, wherein the control part (32) includes an IC having a wiring (26), having second control terminals and to which the control terminals of one of the first substrate and the second substrate are connected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric A. Bomkamp whose telephone number is 571-270-1559. The examiner can normally be reached on Monday thru Friday 8:00AM-5:00PM E.S.T..

Art Unit: 2826

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached at 571-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EB
8-27-07